UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/992,410	11/26/2001	Malcolm Betts	13528-156US	5520

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ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 December 2005*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2, and 4-24* is/are pending in the application:

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2, and 4-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

- Applicant's Amendment filed 12/28/05 is acknowledged.

- The amendment to the Abstract is approved.

- The amendment to Fig. 2 filed 12/28/05 is approved.

- Claims 1, 4, 5, 10, 17, 18, and 23 have been amended.

- Claim 3 has been canceled.

- No claims have been added.

- Claims 1, 2, and 4-24 remain pending.

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2.   Claims 1, 5, 6, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated

by Pub. No. US 2003/0002779 A1 ("Bobin").

Regarding claims 1 and 17,

Bobin shows in Fig. 6 receiving a plurality of optical input signals in step 602 in

an optical cross connect (OXC) system of Fig. 2 (pg. 4, para. 62, lines 3-4; claim –

receiving the data stream at an input port of the cross-connect).

Bobin further shows in Fig. 6 dividing each of the input signals at step 604 into N

slices (pg. 4, para. 62, lines 4-5; claim – splitting the received data stream into at least

two sub-streams).

Bobin discloses that switching circuits can be configured independently

(independent pointer processing)(pg. 4, para. 67, lines 1-2).   Bobin shows in Fig. 4

10 G bit/second input signal 401 feeds into a slicer 402, which divides input signal 401

into four 2.5 G bit/second signals/slices (STS concatenation) that feed into switching

circuits 404-407 (pg. 3, para. 50, lines 4-7). Bobin further discloses that if there is a

small skew in path delay across the four lanes as they are received at the splicer, a

special circuitry synchronizes traffic on the four lanes to eliminate skew (successful

pointer processing) by queuing and inserting special "synchronization characters" (pg.

3, para. 60, lines 1-9; claim – modifying at least one sub-stream to emulate a

conventional STS concatenation with sufficient accuracy to enable successful pointer

processing through a shelf).

Bobin further shows in Fig. 4, four 2.5 bit/second outputs (sub-streams) from

switching circuits 404-407 (respective shelf) feed into splicer 408, which splices

(mapping) the four signals into a single 10 G bit/second output signal 410 (selected

output port)(pg. 3, para. 51, lines 1-4; claim – mapping each of the sub-streams to a

selected output port of the cross-connect via a respective shelf).

Bobin still further shows in Fig. 4, constructing output data stream 410 of 10 Gb/s

at the output port that is equivalent to the input data stream 401 of 10 Gb/s using the

four substreams of 2.5 Gb/s each of the switching circuits 404-407 (claim – constructing

an output data stream that is equivalent to the received data stream, at the output port,

using content of each of the sub-streams).

3.   Regarding claims 5, 6,

        Bobin discloses that if there is a small skew in path delay across the four lanes

as they are received at the splicer, a special circuitry synchronizes traffic on the four

lanes to eliminate skew by queuing and inserting special "synchronization characters"

(claim 5 – assigning a default value in the lanes coming out of slicer at a regular time

interval (claim 6 - predetermined set of bits)(assigning a default value)(pg. 3, para. 60,

lines 1-9).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negated by the manner in which the invention was made.

5.   Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Bobin in view of U.S. Patent No. 6,822,975 B1 ("Antosik").

        Bobin does not disclose wherein the data stream comprises an arbitrary mixture

of high and low bandwidth signals .

        Antosik discloses that different outgoing and incoming signals may have different

data rates. For example, both OC3-rate and OC12-rate signals packed into a single

OC48 optical signal (Col. 2, lines 5-8).

It would have been *prima facie* obvious to one of ordinary skill in the art at the

time of the invention was made to modify the data stream of Bobin to have mixture of

both high and low bandwidth traffic of Antosik. One skilled in the art would have been

motivated to combine Bobin with Antosik in order to efficiently use the available

bandwidth.

6.   Claims 4, 16, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Bobin in view of Pub. No. US 2003/0189925 A1 ("Wellbaum").

Regarding claim 4,

Bobin does not disclose the steps of inspecting an overhead of each

frame to determine whether the overhead contains a payload pointer and if so, storing

the payload pointer.

Wellbaum shows in Fig. 9(a), that STS-1 #1 is the parent and contains the

pointer, and STS-1 #2 and STS-1 #3 are children and therefore contain concatenation

indicators, indicating they have a parent. It is inherent that overhead of each frame is

inspected to determine whether the overhead contains a payload pointer. If an STS-1

has a concatenation indicator, RPI 814 must obtain the pointer value from the parent.

In the example shown in FIG. 9(a), RPI 814 obtains the pointers for children STS-1 #2

and STS-1 #3 from parent STS-1 #1. Fig. 9 (c) shows registers with memory locations

corresponding to child time slots that store data indicating their respective parent time

slot (Pg. 5, paragraph 73, lines 1-4 and pg. 6, paragraph 75, lines 8-9).

It would have been *prima facie* obvious to one of ordinary skill in the art at the

time of the invention was made to include in the step of splitting the received data

stream of Bobin to comprise the steps of inspecting the overhead of the data stream for

a payload pointer and storing the payload pointer of Wellbaum. One skilled in the art

would have been motivated to combine Bobin with Wellbaum so that the pointer can be

used for synchronization during recombination of the subset streams.

7.   Regarding claims 16 and 23,

Bobin discloses that if there is a small skew in path delay across the four lanes

as they are received at the splicer, a special circuitry synchronizes traffic (controlling the

read operation) on the four lanes to eliminate skew by queuing (buffering the payload

data) and inserting special "synchronization characters" (bytes are read substantially

simultaneously) in the lanes coming out of slicer 402 at a regular time interval (pg. 3,

para. 60, lines 1-9+).

8.   Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Bobin in view of U.S. Patent No. 6,411,631 B1 ("Sugawara").

Regarding claims 7 and 8,

Bobin does not disclose predetermined set of bits is located within the overhead

of each frame and comprises SS bits of an H1 byte.

Sugawara discloses that in the SONET system overhead's (claim 7) SS bits of the H1 byte (claim 8) are undefined and can be used to indicate a condition (col. 1, lines 62-63).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the writing of the default value to the predetermined set of bits as taught by Bobin to include that the predetermined set of bits be located within the overhead of each frame and comprise SS bits of the H1 byte as disclosed by Sugawara. One skilled in the art would have been motivated to combine Bobin with Sugawara because the SS bits are undefined and can be used to indicate a condition (Sugawara, col. 2, line 7).

9.   Regarding claim 9,

Bobin does not disclose wherein the default value is binary "00".

Sugawara discloses that the SS bit is an undefined and so the SS bits are made to be "00".

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the writing of the default value as taught by Bobin to include that the default value of the SS bits to be "00" as disclosed by Sugawara. One skilled in the art would have been motivated to combine Bobin with Sugawara to conform to the SONET standard.

10.   Claims 10-12, 15, 18-20, and 24 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Bobin in view of Pub. No. US 2002/0126712 A1 (Mueller), and

in further view of Pub. No. US 2003/0189925 A1 ("Wellbaum").

Regarding claims 10, 18, and 19,

Bobin does not disclose determining a lead frame, examining frame overhead for

concatenation indicator, replacing the concatenation indicator with payload pointer and

inserting a split indicator into the predetermined set of bits.

Mueller discloses numbering the concatenated pulse frames by marking the first

concatenated pulse frame (determining a lead frame, examining frame overhead) or by

numbering (split indicator) all concatenated pulse frames of a superframe (pg. 1, para.

6).

Wellbaum shows in Fig. 11 parent-child relationships for STS-1s, and is used by

PTG 1232 in processing payloads for output. The table 1310 includes a first

submemory having concatenation indicators (CAT_IND) and a second submemory

storing STS identifiers (STS_ID) and the concatenation indication field indicates

whether the corresponding STS-1 is a parent or child, marked by 0 and 1 (pg. 6, para.

84).

It would have been *prima facie* obvious to one of ordinary skill in the art at the

time of the invention was made to modify the treatment of the sub-streams of Bobin to

include marking the first frame or by numbering all concatenated pulse frames as taught

by Mueller and replacing concatenated IDs with a valid payload pointer as shown in Fig.

11 of Wellbaum. One skilled in the art would have been motivated to combine Bobin

with Mueller and Wellbaum to enable the subsignals to be detected in a simple manner

at the receiving end and to be combined in an error-free manner to form the original

signal (Mueller, pg.1, para. 5).

11.   Regarding claims 11 and 20,

Bobin does not disclose forwarding the lead frame to a next successive shelf,

and if not a lead frame, forwarding the frame to the same shelf as the previous frame.

Mueller discloses numbering the concatenated pulse frames by marking the first

concatenated pulse frame or by numbering all concatenated pulse frames of a

superframe (pg. 1, para. 6). With marking of first frame and numbering of all

concatenated frames, it is within one of ordinary skill in the are to forward only lead

frames to a next shelf.

It would have been *prima facie* obvious to one of ordinary skill in the art at the

time of the invention was made to modify the treatment of the sub-streams of Bobin to

include marking the first frame and numbering all concatenated pulse frames as taught

by Mueller to forward only lead frames to a next shelf. One skilled in the art would have

been motivated to combine Bobin with Mueller to efficiently use the available bandwidth

of the optical cross-connects.

12.   Regarding claim 12,

Bobin does not disclose wherein the next successive shelf is selected in

accordance with a predetermined shelf order sequence.

Mueller discloses numbering the concatenated pulse frames by marking the first

concatenated pulse frame or by numbering all concatenated pulse frames of a

superframe (pg. 1, para. 6). With marking of first frame and numbering of all

concatenated frames, it is within one of ordinary skill in the art to designate a

predetermined shelf order sequence.

It would have been *prima facie* obvious to one of ordinary skill in the art at the

time of the invention was made to modify the treatment of the sub-streams of Bobin to

include marking the first frame and numbering all concatenated pulse frames as taught

by Mueller to select shelf to forward lead frames in accordance with a predetermined

shelf order sequence. One skilled in the art would have been motivated to combine

Bobin with Mueller as a matter of design efficiency.

13.   Regarding claims 15 and 24,

Bobin does not show copying at least a portion of overhead, examining sub-

streams for split indicator, inserting a concatenation indicator if frame contains a split

indicator, and if frame does not contain a split indicator, examining for payload pointer

and inserting a valid payload pointer into the overhead of the corresponding frame of

the output data stream.

Mueller shows in Fig. 2, PR 256's overhead bytes A1 being copied to PR64.1

substream and since A1 is not replaced it will also be transmitted to the output (claim –

copying at least a portion of overhead).

Mueller discloses numbering (claim - split indicator) the concatenated pulse

frames to enable subsignals to be detected in a simple manner at the receiving end and
to be combined in an error-free manner to form the original signal (pg. 1, para. 5).

Wellbaum shows in Fig. 11 parent-child relationships for STS-1s, and is used by
PTG 1232 in processing payloads for output. The table 1310 includes a first
submemory having concatenation indicators (CAT_IND) and a second submemory
storing STS identifiers (STS_ID) and the concatenation indication field indicates
whether the corresponding STS-1 is a parent or child, marked by 0 and 1 (pg. 6, para.
84; claim – inserting a concatenation indicator if frame contains a split indicator).

Wellbaum shows in Fig. 12, a pointer generation circuit 1232 that aligns
concatenated payloads so that each outgoing SONET frame of a series of concatenated
frames has the same pointer value in the transport overhead (pg. 7, para. 87; claim –
examining for payload pointer and inserting a valid pointer into the overhead of the
corresponding frame of the output data stream.

It would have been *prima facie* obvious to one of ordinary skill in the art at the
time of the invention was made to modify the treatment of the sub-streams of Bobin to
include copying some overhead bytes and examining for frame numbering as taught by
Mueller and constructing a parent-child relationship table so that if a split indicator is
detected in the frame a concatenation ID can be inserted into a corresponding frame
and if no split indicator is found, generating and inserting a valid payload pointer as
taught by Wellbaum. One skilled in the art would have been motivated to combine Bobin
with Mueller and Wellbaum so that concatenated time slots can be properly read
downstream (Wellbaum, pg. 7, para. 87, lines 4-7).

14.   Claims 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Bobin in view of Mueller.

Regarding claims 13 and 21,

Bobin does not disclose constructing sequential frames and mapping payload

data from the sub-stream while aligned with each of the other sub-streams.

Mueller discloses numbering the concatenated pulse frames to enable

subsignals to be detected in a simple manner at the receiving end and to be combined

(constructing sequential frames) in an error-free manner (mapping payload data from

the sub-stream while aligned with other sub-streams) to form the original signal (pg. 1,

para. 5).

It would have been *prima facie* obvious to one of ordinary skill in the art at the

time of the invention was made to modify the construction of the output data streams as

taught by Bobin to include numbering the concatenated pulse frames and combining

them as taught by Mueller. One skilled in the art would have been motivated to

combine Bobin with Mueller to enable the recombination to be error free (Mueller, pg. 1,

para. 5).

15.   Claims 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Bobin in view of Mueller, and in further view of Antosik ("Antosik").

Bobin in combination with Mueller does not disclose wherein a phase relationship

between a sub-stream and the output data stream is arbitrary.

Antosik discloses that different outgoing and incoming signals may have different

data rates. For example, both OC3-rate and OC12-rate signals packed into a single

OC48 optical signal (Col. 2, lines 5-8).

It would have been *prima facie* obvious to one of ordinary skill in the art at the

time of the invention was made to modify the data stream of Bobin to have mixture of

both high and low bandwidth output traffic of Antosik. One skilled in the art would have

been motivated to combine Bobin and Mueller with Antosik in order to efficiently use the

available bandwidth.

Response to Arguments

16.   Applicant's arguments with respect to claims 1 and 17 have been considered but

are moot in view of the new ground(s) of rejection.

Conclusion

17.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

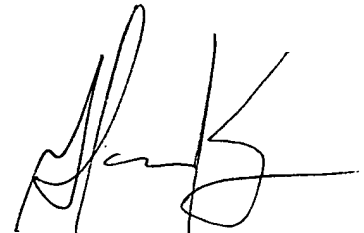than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Anthony Sol whose telephone number is (571) 272-

5949. The examiner can normally be reached on M-F 7:30am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Anthony Sol
Examiner
Art Unit 2662
3/17/2006

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